coding sequence, comprising the step of transforming the mouse cell with a random gene trap vector comprising a DNA construct, wherein the DNA construct (k) lacks a promoter, and (ii) comprises the sequence:

5' X-A-P-B-Q-C-Y 3'

in which

X comprises a splice acceptor sequence;

Y comprises a polyadenylation signal;

P is an internal ribosome entry site (IRES);

Q is the heterologous gene sequence, including a translation start codon; and

A, B and C are, separately, optional linker sequences.

28. A mouse cell comprising a heterologous gene coding sequence inserted by the method of Claim 22.

29. A descendant of the mouse cell according to Claim 28, wherein the descendant has inherited the inserted heterologous gene coding sequence.

32. A DNA construct for randomly inserting a heterologous gene sequence into a mouse cell genome, said construct lacking a promoter and comprising the sequence;

5' X-A-P-B-Q-C-Y 3'

in which

X comprises a splice acceptor sequence;

Y comprises a polyadenylation signal;

P is an internal ribosome entry site (IRES);

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Q is the heterologous gene sequence, including a translation start codon; and

A, B, and C are, separately, optional linker sequences.

34. A DNA construct according to Claim 32 in which the heterologous gene sequence additionally codes for a selectable marker to facilitate selection of mouse cells containing a heterologous gene that has been inserted into an endogenous gene.

43. A method according to Claim 22, wherein the mouse cell is a mouse stem cell.

44. A method according to Claim 22, wherein the mouse cell is a mouse embryonic stem cell.

45. A DNA construct according to Claim 32, wherein the mouse cell is a mouse stem cell.

46. A DNA construct according to Claim 32, wherein the mouse cell is a mouse embryonic stem cell.

REMARKS

Applicants have canceled claim 25, without prejudice to their right to prosecute the subject matter of this claim in a later filed application. Claims 22, 28, 29, 32, and 34 have been amended to specifically refer to mouse cells and mouse cell genomes.

Applicants reserve their right to prosecute the broader subject matter deleted from these claims in a later fled application. Applicants have added claims 43-46 directed to specific embodiments of the claimed invention. No new matter has been added by these amendments.

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